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09/782,101

02/12/2001

Govinda Nallappa Rajan

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12/20/2004

LUCENT TECHNOLOGIES INC.

DOCKET ADMINISTRATOR

101 CRAWFORDS CORNER ROAD - ROOM 3J-219

HOLMDEL, NJ 07733

EXAMINER

CURS, NATHAN M


ART UNIT

PAPER NUMBER

2633

DATE MAILED: 12/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|---|---|
| Office Action Summary | Application No. 09/782,101 | Applicant(s) RAJAN, GOVINDA NALLAPPA | |
| | Examiner Nathan Curs | Art Unit 2633 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6 and 9-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6 and 9-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specifically, claim 6 claims "the injection current having an amplitude near said threshold of operation such that said optical gain process and an optical absorption process within said semiconductor laser element balance one another longer than said retention time in order to keep said digital optical signal on said predetermined digital level during said retention time". However, in the specification (page 5, lines 10-25 and page 8, lines 10-14), in the context of the applicant describing using well known semiconductor laser element behavior for the purpose of an optical memory, the applicant only discloses that "gain equals loss" when the injection current is "at the threshold value", and that "gain increases by several orders of magnitude" when the injection current is within "a narrow electrical range close to the threshold value". Therefore, the applicant discloses that gain and absorption balance out one another only in the case where the injection current is at the threshold level, not the case where the threshold is near the threshold level. Gain and absorption balancing out one another when the injection current is "near" the threshold is new matter.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagashima et al. (US Patent No. 4608682) in view of Lim et al. (US Patent No. 6026108).

Regarding claim 6, Nagashima et al. disclose an arrangement for buffering, during at least a predetermined retention time (col. 1, lines 45-53), a digital optical signal having a predetermined digital level (col. 3, lines 39-46), comprising: a semiconductor laser element with an injection current threshold of operation and optical input for receiving the optical signal (col. 3, lines 46-50 and col. 4, lines 14-24); and a current source connected to said semiconductor laser element and arranged to inject an injection current to said semiconductor laser element to establish an optical gain process in said semiconductor laser element (col. 4, lines 25-39 and col. 5, lines 1-18), the injection current having an amplitude at said threshold of operation such that said optical gain process and an optical absorption process within said semiconductor laser element balance one another longer than said retention time in order to keep said digital optical signal on said predetermined digital level during said retention time (col. 4, lines 25-53).

Nagashima et al. also disclose a controller connected to said current source to provide a current control signal to said current source to control an amplitude of said injection current (fig. 2, element 20 and col. 5, lines 1-18). In the laser configuration of fig. 2, Nagashima et al. are silent regarding feedback used for stabilizing the injection current. Lim et al. disclose stabilizing the injection current of a semiconductor laser at the threshold level for balance between gain and absorption, using a feedback loop where the laser output is monitored and fed back to the drive

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circuitry to stabilize the injection current, in order to support the laser operation against environment variations (col. 1, line 60 to col. 2, line 10). It would have been obvious to one of ordinary skill in the art at the time of the invention to use this feedback teaching of Lim et al. for supporting the threshold injection current of Nagashima et al., to enable the laser of Nagashima et al. to resist environmental variations that could alter the injection current produced by the drive circuitry and/or the effective injection current threshold level of the laser. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the controller of Nagashima et al. to translate the laser output feedback signal taught by Lim et al. into control of the voltage source disclosed in Fig. 4 of Nagashima et al., since the voltage source is responsible for producing the injection current for the laser. Further, since the teaching of Lim et al. corresponds to supporting a threshold injection current level, it would have been obvious to one of ordinary skill in the art at the time of the invention, to further the control the voltage source based on the feedback signal only when the injection current is supposed to be maintained at the threshold (when the laser is being used in memory mode), and not when the laser is in reset mode where resetting the laser requires change the injection current level away from the threshold level (this reset action being in contradiction to maintaining an unchanging threshold level).

Regarding claim 9, Nagashima et al. disclose an optical output switch connected between an output of said semiconductor laser element and an output line, and connected to said controller to receive an output switch control signal to control outputting said optical signal to said output line (fig. 2, elements 20 and 100, and col. 3, lines 50-56).

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5. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagashima et al. (US Patent No. 4608682) in view of Lim et al. (US Patent No. 6026108), as applied to claims 6 and 9 above, and further in view of Yoshida et al. (US Patent No. 6104477).

Regarding claim 10, the combination of Nagashima et al. and Lim et al. do not disclose an optical output directional filter connected between said output of said semiconductor laser element and said optical output switch. Yoshida et al. disclose a direction filter between a laser and an optical switch (fig. 1, elements 10, 17 and 18 and col. 2, lines 14-22), for suppressing downstream optical noise leaks from reaching the upstream optical source. It would have been obvious to an artisan at the time of the invention to add the directional filter disclosed by Yoshida et al., between the laser and optical output switch of Nagashima et al. to suppress optical noise leaks from reaching the laser.

Regarding claim 11, the combination of Nagashima et al. and Lim et al. disclose an optical input switch connected to said input of said semiconductor laser element (Nagashima et al.: fig. 2, element 60 and col. 3, lines 46-50), and connected to said controller to receive an input switch control signal to control inputting said optical signal to said semiconductor laser element (Nagashima et al.: fig. 2, elements 20 and 60 and col. 4, lines 62-68).

Regarding claim 12, the combination of Nagashima et al. and Lim et al. do not disclose an optical input directional filter connected between said input of said semiconductor laser element and said optical input switch. Yoshida et al. disclose a direction filter adjacent and downstream from an optical switch (fig. 1, elements 20 and 21 and col. 2, lines 29-35), for directing transmission in one direction. It would have been obvious to an artisan at the time of the invention to add the directional filter disclosed by Yoshida et al., between the input of the laser and the optical input switch of Nagashima et al. to direct transmission in one direction toward the laser.

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Regarding claim 13, the combination of Nagashima et al. and Lim et al. disclose that said controller is arranged for controlling said current source such that said current source clears said semiconductor laser element by turning off said injection current during a predetermined clearing time period prior to switching said digital optical signal to said semiconductor laser element by said optical input switch (Nagashima et al.: col. 4, lines 62-68).

Response to Arguments

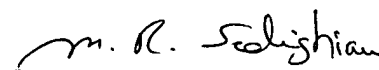
6. In the applicant's arguments of 24 September 2001, the applicant states that the claim 6 amendments are supported by "page 5 to 8 and 21 to 25 of the present application"; however, there are no pages 21 to 25 in the specification of the applicant's present application as originally filed.

7. Applicant's arguments with respect to claim 6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.


M. R. SEDIGHIAN
PRIMARY EXAMINER